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09/941,988	08/30/2001	Hirayoshi Tanei	566.40595X00	7616

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ANTONELLI TERRY STOUT AND KRAUS
SUITE 1800
1300 NORTH SEVENTEENTH STREET
ARLINGTON, VA 22209

EXAMINER

BLACKWELL RUDASIL, GWENDOLYN A

ART UNIT

PAPER NUMBER

1775

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,988

Applicant(s)

TANEI ET AL.

Examiner

Gwendolyn A. Blackwell-Rudasill

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 14 February 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) 3 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1,2 and 4-6 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4) Interview Summary (PTO-413) Paper No(s) _____.

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-2 and 4 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent no. 6,338,893, Kodera et al in view of United States Patent no. 6,404,318, Uchikoba et al.

Kodera et al disclose a glass ceramic printed circuit substrate with a conductive paste printed thereon. The conductive paste is composed of "100 parts by weight of silver-platinum;

0.2 to 1 part of manganese dioxide; 0.2 to 1 part copper oxide; 0.3 to 1 part by weight of silicon dioxide; and 3 to 5.6 parts by weight of molybdenum and tungsten powder," (column 3, lines 56-62). A ceramic printed circuit substrate is made by forming a printed circuit made of the aforementioned conductive paste on green sheets that are composed of a glass ceramic containing a borosilicate glass, (column 4, lines 46-65). Kodera et al also disclose that a conductive film containing a glass frit causes an excessive amount of glass to appear on the surface of a circuit conductor during firing which causes a reduction in bonding strength. Thereby requiring a conductive paste that does not contain glass frit, (column 3, lines 3-28). Kodera et al do not specifically disclose the surface area of the silver particles as exemplified by Applicant.

Uchikoba et al disclose a multilayer electronic component that utilizes a conductive paste that does not include glass frit. Amounts of manganese dioxide and bismuth oxide are added to a conductive paste with the main constituent being silver. The silver powder has a specific surface area of $0.5 \text{ m}^2/\text{g}$. The silver powder is mixed with the manganese dioxide and bismuth oxide, a binder and a solvent to make a conductive paste. In addition, the silver can be substituted with a silver-palladium mixture having the same powder characteristics of the silver powder, (columns 3-4, lines 35-16).

The inventions of Kodera et al and Uchikoba et al are related in that each are to electrical components that utilize a silver conductive paste without the use of a glass frit. As such, it would have been obvious to one skilled in the art to modify the invention of Kodera et al with the conductive paste of Uchikoba et al to create a glass ceramic printed substrate having a conductive layer that exhibits excellent conductance and solder wettability, (Kodera et al, column 3, lines 50-56).

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Although, Kodera et al and Uchikoba et al do not specifically disclose that the temperature difference between the conductor paste and the softening temperature of the glass in the substrate have a difference of $\pm 50^{\circ}\text{C}$, it is demonstrated that the green sheets and the printed circuits can be printed at the same time, which satisfies that limitation, (Kodera, abstract). Specifically, examples 3-5 display, even without the use of silicon dioxide, that solder wettability is at 100%, (Kodera et al, Table 1, columns 7-8).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn A. Blackwell-Rudasill whose telephone number is (703) 305-9741. The examiner can normally be reached on Monday - Thursday; 6:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gwendolyn A. Blackwell-Rudasill
Examiner
Art Unit 1775

GAC
gbr
May 18, 2003


DEBORAH JONES
SUPERVISORY PATENT EXAMINER